AWARENESS ON PROSTHODONTIC REHABILITATION OF CLEFT LIP AND CLEFT PALATE PATIENTS AMONG DENTAL UNDERGRADUATE STUDENTS IN CHENNAI - A SURVEY

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ABSTRACT

Cleft lip or cleft palate are the openings or splits in the upper lip of the roof of the mouth or both. Cleft lip / palate affects approximately 1 in 700 live births. Most clefts are likely caused by multiple genetic and non genetic factors. Cleft lip and cleft palate are the most common congenital defects of birth. Cleft lip and cleft palate occurs in the forms of syndromic and non syndromic. Prosthodontic rehabilitation aims at providing a better oral health by aiming to improve functional and esthetic demands. Patients suffering from cleft palate are not seen generally much but their number is not negligible as well. The aim of the present study is to study and analyze the knowledge of prosthodontic rehabilitation of cleft lip and cleft palate patients among undergraduate dental students and to create an awareness on this topic. A questionnaire was created and circulated on an online platform and the responses were collected . The datas were collected and analysed with the help of statistical software SPSS. The data collection software used is google forms . The steps followed in software analysis are data collection, data analysis and data interpretation. The results show that most respondents were aware of prosthodontic rehabilitation of cleft lip and cleft palate patients among dental students. The chi square test shows that most of the female respondents are more aware about prosthodontic rehabilitation of cleft lip and cleft palate patients.

KEYWORDS: Cleft lip; Cleft palate; Cleft lip/ palate treatment and management; Prosthetic management; Undergraduate Dental students.

INTRODUCTION

Cleft lip or cleft palate are the openings or splits in the upper lip of the roof of the mouth or both. Cleft lip or cleft palate results when the facial structures of a developing unborn baby is not closed completely. Cleft lip and cleft palate are the most common congenital defects of birth. Cleft lip and cleft palate occurs in the forms of syndromic and non syndromic. (Dixon *et al.*, 2011) Cleft lip / palate affects approximately

1 in 700 live births. Most clefts are likely caused by multiple genetic and non genetic factors. (Ayna, Başaran and Beydemir, 2009)Substantial phenotypic diversity can be found in people with the following defects and their family members: from sub clinical phenotypes to associated syndromic features. (Leslie and Marazita, 2013) Prosthodontists face multiple challenges in treating patients with bilateral cleft and palate. Some of them include multiple missing and malposed anterior teeth , unfavourable soft tissues , movement of premaxillary segment and a tense maxillary lip. (Bidra, 2012)

Prosthodontic rehabilitation aims at providing a better oral health by aiming to improve functional and esthetic demands. Patients with congenital abnormalities, intraoral anatomical deformities, lack of teeth, inspection of appropriate occlusal, inadequate arc development and vertical dimension are taken into consideration for the planning of prosthodontic rehabilitation. (Acar *et al.*, 2013) A conventional fixed dental prosthesis can be used for the prosthetic treatment of unilateral cleft patients. Successful oral rehabilitation in adult patients with cleft lip and cleft palate includes definitive fixed and removable prosthesis and also involves assistance of orthodontic and orthognathic treatments. (Geethu and Anilkumar, 2018) Previous studies state that implants placed in augmented bones have statistically less rate of survival . When placed in native bone , machine implants show stable survival rate. The survival rate was shown to decrease significantly at each study endpoint when machine implants were placed in augmented bone. (Lambert *et al.*, 2009) In previous studies it was also noted that 50% of patients were facilitated by orthodontic uprighting of the teeth and correction of midline deviations . 10 % of the cases showed possibilities for later prosthodontic treatment , with extensive defects in alveolar process. (Enemark, Krantz-Simonsen and Schramm, 1985)

The aim of the present study is to analyze the knowledge about prosthodontic rehabilitation of cleft lip and cleft palate patients among high school students and professional students. Restoration of patients with unilateral and bilateral cleft lip and palate, missing anterior, deficient alveolar ridges are challenging tasks. Oral rehabilitation of the individuals with cleft lip and palate is directly related to severity of anatomical malformations. Patients suffering from cleft palate are not seen generally much but their number is not negligible as well. Prosthetic treatment of patients of such kind include good planning that takes note of all remaining teeth and roots. (Vojvodic and Jerolimov, 2001) Thus the previous discussed factors make the necessity of present study quite significant.

MATERIALS AND METHODS
The type of population used for the study are final year undergraduate dental students choose from different colleges in chennai . It is approved by the Institutional review board and the study population is 100. The sampling method used is random sampling, this method is chosen by careful review of previous studies. As conducted by Piero Papi et al , the number of participants is 63 and the sampling method used is random sampling.(Papi *et al.*, 2015) In a study conducted by Adam B Weinfield et al, the number of participants are 6432 and the sampling method used is random sampling. (Weinfeld *et al.*, 2005)

A questionnaire was made and then circulated on an online platform . The questions are close ended type mostly . The data collection software used is google forms. The data were represented in the form of a bar graph. The statistical software used was SPSS software . Chi square test was the statistical test used. The type of analysis used in this study was descriptive analysis. The dependent variables of the study include age , gender , education. The independent variables include knowledge and awareness. The steps followed in software analysis are data collection, data analysis and data interpretation. The present research has origins from previous studies, where the investigators involved in studies were done based on clinical reports and in vitro studies (Duraisamy *et al.*, 2019) (Ganapathy *et al.*, 2016) (Ranganathan, Ganapathy and Jain, 2017) (Ajay *et al.*, 2017) (Ashok and Suvitha, 2016).

RESULT AND DISCUSSION

The responses of the following data was then analyzed. 100 responses were received. The result summary is as follows - According to Figure 1, 45% were aware of prosthodontic rehabilitation of cleft lip and cleft palate patients , 27% are not aware and 28% have moderate awareness. Pearson chi square test was done and a bar graph (Figure 8) showing association between gender and the awareness of the respondents on prosthodontic rehabilitation of cleft lip and cleft palate was obtained. Majority of the males (28%) are more aware of prosthodontic rehabilitation of cleft lip and cleft palate than females. It is statistically significant (P value - 0.000 - statistically significant) According to Figure 4, 9.09% says that fixed partial denture is the main prosthetic treatment involved in the oral rehabilitation of individuals with cleft lip and cleft palate, 14.14% says that it is removable partial denture , 15.15% says that it is complete denture , 10.10% says that it is implant supported denture and 51.52% says that it is all the above discussed. Pearson chi square test was done and a bar graph (Figure 11);showing association between gender and the knowledge of students based on the type of prosthetic treatments that must be used was obtained . Majority of females (27.27%) have more knowledge on the cause of cleft lip and cleft palate than males. It is statistically significant (P value - 0.000 - statistically significant) According to Figure 2, 10.10% says that the prosthetic reconstruction of cleft lip and cleft palate patients are done in anterior mandible , 15.15% says posterior mandible , 73.74% says anterior maxilla and 1.01% says posterior maxilla. Pearson chi square test was done and a bar graph (Figure 9) showing association between gender and the knowledge of students on prosthetic reconstruction was obtained . Majority of females (40.40%) have more knowledge on prosthetic reconstruction than males. It is statistically significant (P value - 0.000 - statistically significant) According to Figure 3, 12.12% says that most clefts are caused by multiple genetic factors , 18.18% says multiple non genetic factors , 65.66% says both and 4.04% says none. Pearson chi square test was done and a bar graph (Figure 10) showing association between gender and the knowledge of the respondents on the cause of cleft lip and cleft palate was obtained. Majority of females (35.35%) have more knowledge on the cause of cleft lip and cleft palate than males. It is statistically significant (P value - 0.000 - statistically significant). According to Figure 5, 13.13% says that cognitive upper space or gap in the upper lip and alveolus plate is called cleft lip , 18.18% says its cleft palate and 68.69% says it's both . Pearson chi square test was done and a bar graph (Figure 12) showing association between gender and the knowledge of the respondents regarding the basic information related to cleft lip and cleft palate patients was obtained. Majority of females (39.39%) have more knowledge regarding the basic information related to cleft lip and cleft palate patients. It is statistically significant (P value - 0.000 - statistically significant) According to Figure 6, 87.63% agree that palatal prosthesis is a good option when the surgery is not possible and patients are not willing and 12.27% do not agree. According to Figure 7, 57.73% of the respondents were taught about prosthodontic rehabilitation in cleft lip and cleft palate patients in their class and 42.27% were not taught about it.

Previously our team had conducted interventional studies (Ariga *et al.*, 2018) (Ashok *et al.*, 2014) (Venugopalan *et al.*, 2014) and systemic reviews (Selvan and Ganapathy, 2016) (Subasree, Murthy Kumar and Others, 2016) (Vijayalakshmi and Ganapathy, 2016)(Kannan et al, 2017) (Kannan and Venugopalan, 2018) (Basha, Ganapathy et al 2018) which initiated me do the survey study . In the present study (Figure 6), 87.63% agrees that palatal prosthesis is a good option when the surgery is not possible and patients are not willing and 12.27% does not agree. Palatal lift prosthesis consists of an oral component that stabilizes and secures prosthesis , oropharyngeal extension superiorly and posteriorly and displaces imaired soft palate. In the present study (Figure 3), 12.12% says that most clefts are caused by multiple genetic factors , 18.18% says multiple non genetic factors , 65.66% says both and 4.04% says none. According to study by Anya et al 2009 , most clefts are likely caused by multiple genetic and non genetic factors. Therefore , most of the respondents who have answered the present survey are aware about the cause of cleft lip and

cleft palate patients . In present study (Figure 1), 45% is aware of prosthodontic rehabilitation of cleft lip and cleft palate patients, 27% are not aware and 28% have moderate awareness. In similar study , Owatode et al 2014 , 19.8% only had adequate knowledge. (Owotade *et al.*, 2014) There are certain limitations in this study even after a careful evaluation of the study process, the study population was limited and it can be improved to get better information and this study can be conducted among different professionals in future.

CONCLUSION

Most respondents are aware about the prosthodontic rehabilitation of cleft lip and cleft palate. People must pay more attention towards these conditions. Cleft lip / palate affects approximately 1 in 700 live births. Though the number of cleft lip/cleft palate patients are small, we are still able to find quite a number of people suffering from it. They must understand the various prosthetic treatments available for people who suffer with cleft palate/lip as it is quite essential and important. The statistical analysis shows that most of the female respondents are more aware about prosthodontic rehabilitation of cleft lip and cleft palate patients.

AUTHOR CONTRIBUTION

Author 1 (Malavika Pradeep), carried out the study by collecting data and drafted the manuscript after performing the necessary statistical analysis. Author 2 (Dr.L.Keerthi Sasanka) aided in the conception of the topic, has participated in the study design , statistical analysis and has supervised in preparation of the manuscript. Author 3 (Dr. Kavitha) has participated in the study design and has coordinated in developing the manuscript. All authors have discussed the results among themselves and contributed to the final manuscript.

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CONFLICTS OF INTEREST

None declared.

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GRAPHS
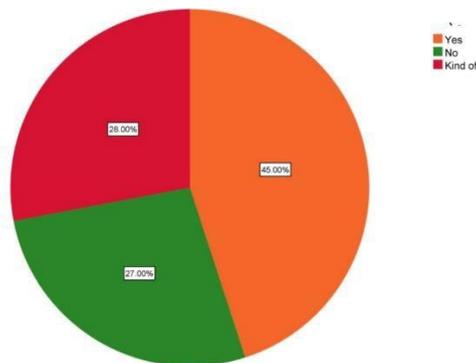
Figure 1- Pie chart showing the frequency distribution on the awareness of students on prosthodontic rehabilitation of cleft lip and cleft palate patients. Most of the respondents (45%) are aware of prosthodontic rehabilitation (orange denotes yes, green denotes no and red denotes kind of).
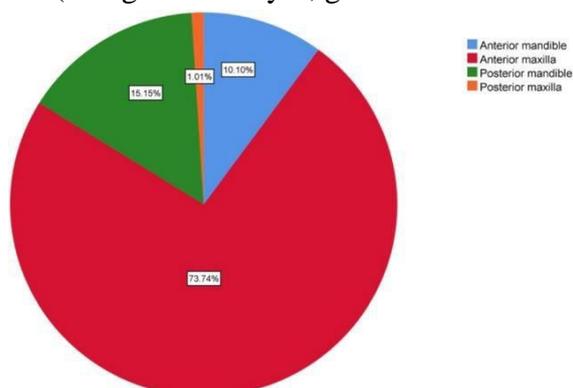
Figure 2 - Pie chart showing frequency distribution about the knowledge of students on prosthetic reconstruction. Majority of the respondents (73.74%) agree that prosthetic reconstruction of anterior

maxilla is important for cleft lip/ cleft palate patients.(Red denotes anterior maxilla, blue denotes anterior mandible, green denotes posterior mandible and orange denotes posterior maxilla)
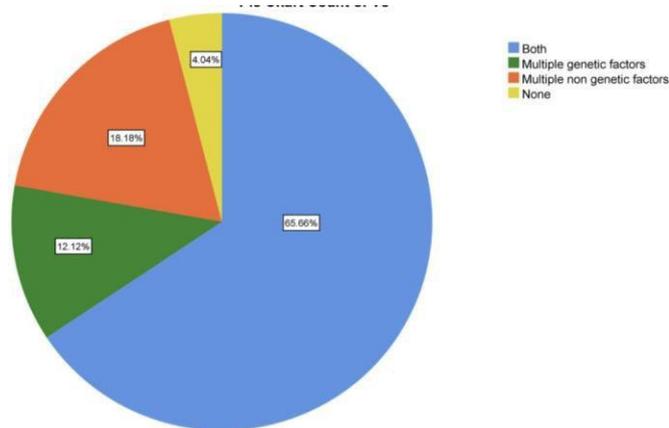
Figure 3 - Pie chart showing the frequency distribution of knowledge in students about the cause of cleft lip and cleft palate. Majority of the respondents (65.66%) agree that most clefts are likely to be caused by both multiple genetic factors and multiple non genetic factors.(Green denotes multiple genetic factors, orange denotes multiple non genetic factors, yellow denotes none and blue denotes both)
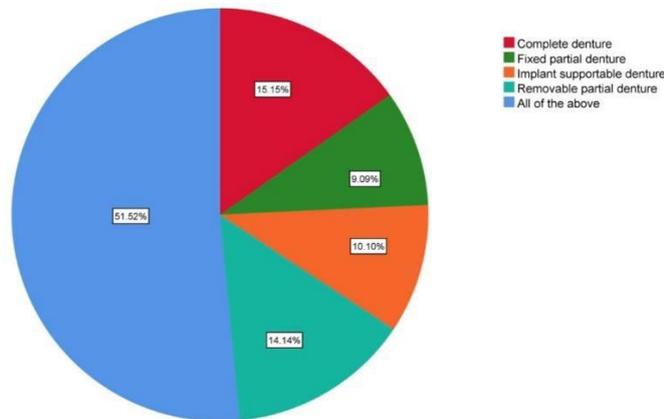
Figure 4 - Pie chart showing the frequency distribution about the knowledge of students based on the type of prosthetic treatments that can be used .Majority of the respondents (51.52%) agree that the main prosthetic treatment involved in oral rehabilitation of individuals with cleft lip and cleft palate includes any of the prosthesis like complete dentures, fixed partial dentures , implant supported denture and removable dental prosthesis.(Red denotes complete denture, green denotes fixed partial denture, orange denotes implant supportable denture, turquoise denotes removable partial denture and blue denotes all of the above)
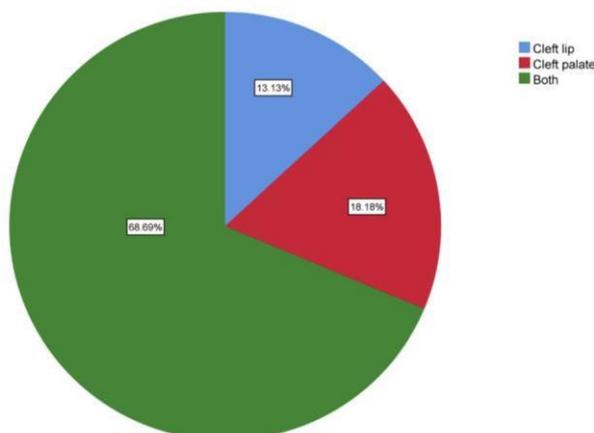
Figure 5 - Pie chart showing the frequency distribution of knowledge among students regarding the basic information related to cleft lip and cleft palate patients. Majority of the respondents (68.69%) agree that

congenital upper space or gap in the upper lip, alveolus and palate is called cleft lip and cleft palate.(Blue denotes cleft lip, red denotes cleft palate and green denotes both)
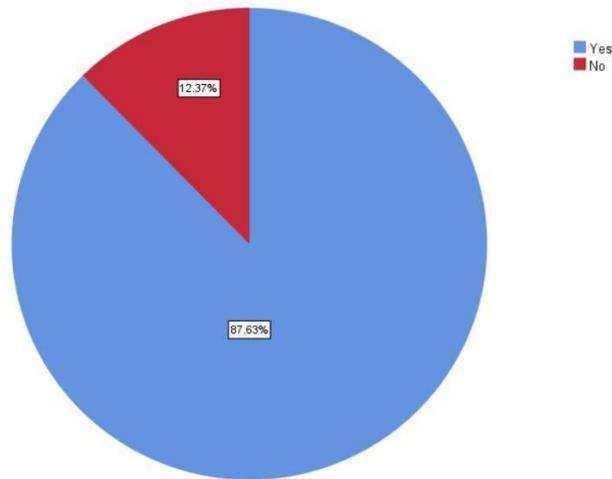
Figure 6 - Pie chart showing the frequency distribution about knowledge of respondents in managing the unfavorable cleft palate conditions. Majority of the respondents (87.63%) agree that palatal prosthesis is a good option for them when surgery is not possible .(Blue denotes yes and red denotes no)
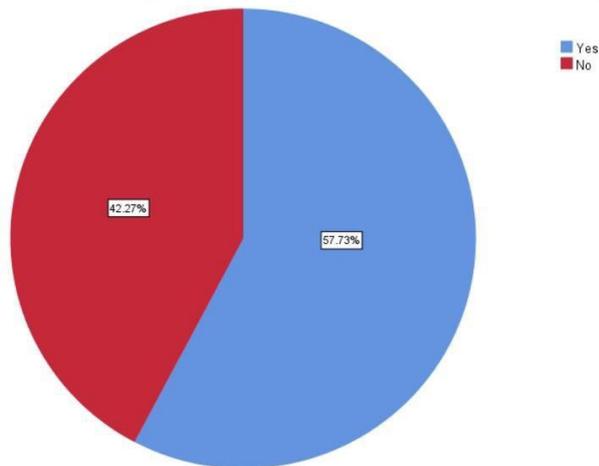
Figure 7 - Pie chart showing the frequency distribution about the number of respondents who were taught about prosthodontic rehabilitation of cleft lip and cleft palate patients in their class. Majority of the respondents (57.73%) were taught about prosthodontic rehabilitation of cleft lip and cleft palate patients in their class .(Blue denotes yes and red denotes no)
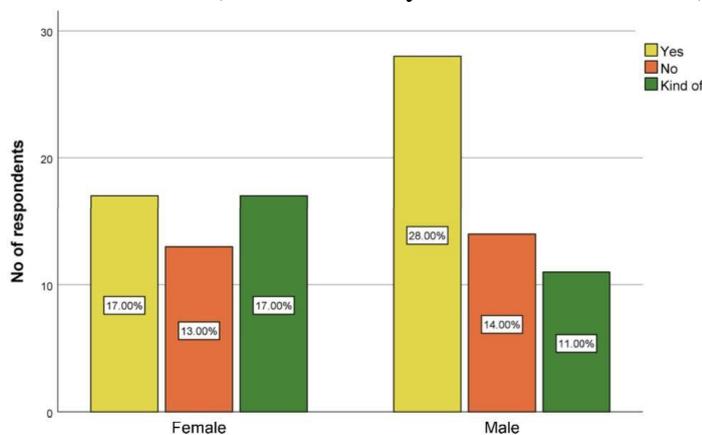
Figure 8- The bar graph represents the association between gender and the awareness of the respondents on prosthodontic rehabilitation of cleft lip and cleft palate. X axis represents gender and Y axis represents the number of respondents. Yellow denotes yes, orange denotes no and green denotes kind of. Majority of the males (28%) were aware on prosthodontic rehabilitation of cleft lip and cleft palate. Pearson chi square

test was done, Chi square value: 207.738, DF: 12, p value: 0.000 (<0.05). Hence it is statistically significant. This proves that male students were more aware than female students.
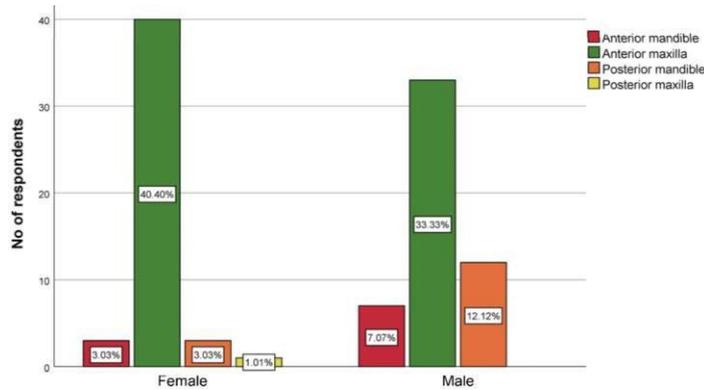
Figure 9 - The bar graph represents the association between gender and the knowledge of students on prosthetic reconstruction. X axis represents gender and Y axis represents the number of respondents. Yellow denotes posterior maxilla , orange denotes posterior mandible, green denotes anterior maxilla and red denotes anterior mandible. Majority of the females (40.40%) were aware of prosthetic reconstruction. Pearson chi square test shows that Chi square value: 161.570, DF: 15, p value: 0.000 (>0.05). Hence it is statistically significant. This proves that females were more aware than males on prosthetic reconstruction.
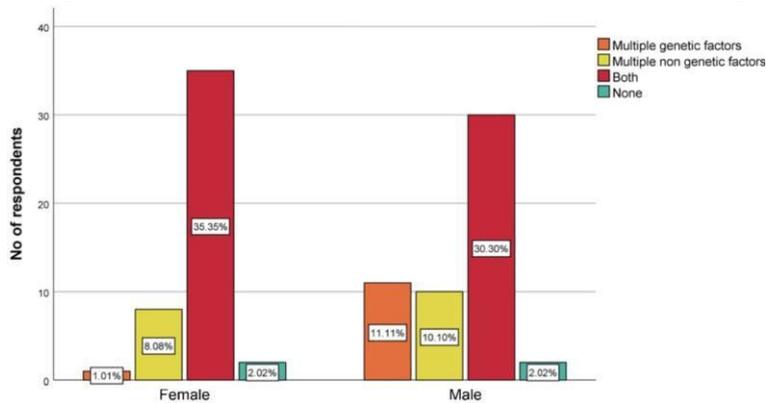
Figure 10- The bar graph represents the association between gender and the knowledge of the respondents on the cause of cleft lip and cleft palate.X axis represents gender and Y axis represents the number of respondents. Yellow denotes multiple non genetic factors, orange denotes multiple genetic factors , green denotes none and red denotes both. Majority of the females (35.35%) were aware of causative factors of cleft lip and cleft palate. Pearson chi square test shows that Chi square value: 161.722, DF: 15, p value: 0.000 (>0.05). Hence it is statistically significant. This proves that females were more aware than males about the causative factors of cleft lip and cleft palate.
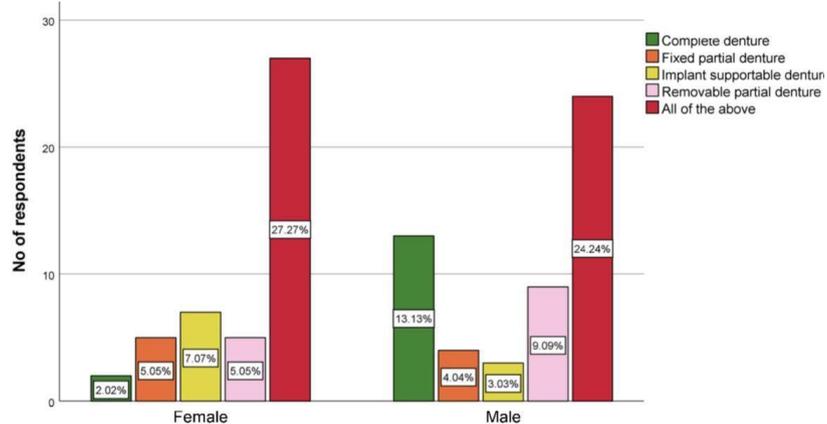
Figure 11- The bar graph represents the association between gender and the knowledge of students based on the type of prosthetic treatments that must be used .X axis represents gender and Y axis represents the number of respondents. Yellow denotes implant supported denture, orange denotes fixed partial denture , green denotes complete denture and pink denotes all of the above. Majority of the females (27.27%) were aware of the type of prosthetic treatment that must be used. Pearson chi square test shows that Chi square value: 163.930, DF: 18, p value: 0.000 (>0.05). Hence it is statistically significant. This proves that females were more aware than males on the type of prosthetic treatments that must be used.
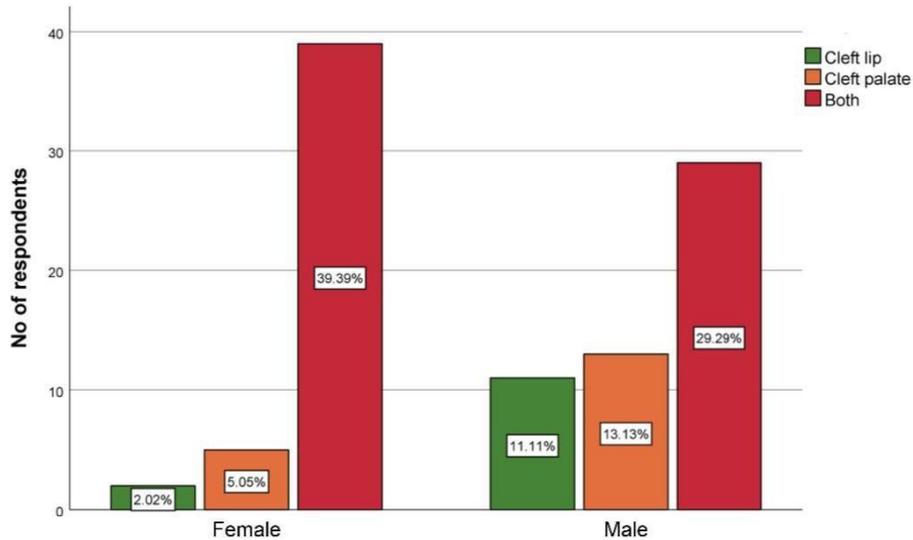
Figure 12- The bar graph represents the association between gender and the knowledge of the respondents regarding the basic information related to cleft lip and cleft palate patients. X axis represents gender and Y axis represents the number of respondents. Orange denotes cleft palate, green denotes cleft lip and red denotes both. Majority of the females(39.39%) were aware of the basic information related to cleft lip and cleft palate patients. Pearson chi square test shows that Chi square value: 164.094, DF: 12, p value: 0.000 (>0.05). Hence it is statistically significant. This proves that females were more aware than males on the basic information related to cleft lip and cleft palate patients.